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EXAMINER

SAVLA, ARPAN P

ART UNIT	PAPER NUMBER
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2185

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,252	Applicant(s) AZUMA ET AL.	
	Examiner Arpan P. Savla	Art Unit 2185	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-12,14,15,17-23,25 and 26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-12,14,15,17-23,25 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 January 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>See Continuation Sheet</u> . | 6) <input type="checkbox"/> Other: _____ |

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :1/4/06, 2/28/07, 12/15/09, 2/16/10.

DETAILED ACTION

The instant application having Application No. 10/563,252 has a total of 22 claims pending in the application, there are 4 independent claims and 18 dependent claims, all of which are ready for examination by the Examiner.

INFORMATION CONCERNING OATH/DECLARATION

Oath/Declaration

1. Applicant's oath/declaration has been reviewed by the Examiner and is found to conform to the requirements prescribed in 37 CFR 1.63.

STATUS OF CLAIM FOR PRIORITY IN THE APPLICATION

2. Acknowledgment is made of Applicant's claim for foreign priority based on applications filed in Japan on July 7, 2003 and January 30, 2004.

INFORMATION CONCERNING DRAWINGS

Drawings

3. Applicant's drawings submitted January 4, 2006 are accepted for examination.

ACKNOWLEDGMENT OF REFERENCES CITED BY APPLICANT

Information Disclosure Statement

4. As required by MPEP § 609(c), Applicant's submission of the Information Disclosure Statement(s) dated January 4, 2006, February 28, 2007, December 15,

Art Unit: 2185

2009, and February 16, 2010 are acknowledged by the Examiner and the cited references have been considered in the examination of the claims now pending. As required by MPEP § 609 c(2), a copy of the PTOL-1449 initialed and dated by the Examiner is attached to the instant Office action.

OBJECTIONS

Claims

5. **Claims 3-8** are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 3 is dependent on itself. Claims 4-8 are dependent on claim 3. Based on the previous dependency of claim 3 (which has now been deleted), for the purposes of examining the instant application, the Examiner will interrupt claim 3 as being dependent on claim 1.

6. **Claim 3** is also objected to because the claim recites the limitation "the data of file management information" on lines 2-3, however, there is insufficient antecedent basis for this limitation in the claim. Applicant may consider amending the claim to instead read "data of file management information".

7. **Claims 8 and 21** are objected to because the claims recite the limitation "the data in the partial address space" on lines 2-3 of each claim, however, there is

Art Unit: 2185

insufficient antecedent basis for this limitation in the claims. Applicant may consider amending the claims to instead read “data in the partial address space”.

8. **Claims 8 and 21** are also objected to because the limitation “said address space” on lines 3-4 of each claim should instead read “said partial address space”.

9. **Claim 10** is objected to because the claim recites the limitation “the data corresponding to said first address space” on lines 8-9, however, there is insufficient antecedent basis for this limitation in the claim. Applicant may consider amending the claim to instead read “data corresponding to said first address space”.

10. **Claim 11** is objected to because the claim recites the limitation “the date of file management information” on line 2, however, there is insufficient antecedent basis for this limitation in the claim. Applicant may consider amending the claim to instead read “**data** of file management information”.

11. **Claim 15** is objected to because the comma after the word “allocated” on line 16 should be deleted.

12. **Claim 17** is objected to because the claim recites the limitation “the data of file management information” on line 3, however, there is insufficient antecedent basis for this limitation in the claim. Applicant may consider amending the claim to instead read “data of file management information”.

13. **Claim 23** is objected to because the claim recites the limitation “the data relating to a file management” on line 12, however, there is insufficient antecedent basis for this limitation in the claim. Applicant may consider amending the claim to instead read “data relating to a file management”.

Art Unit: 2185

14. **Claim 26** is objected to because the claim recites the limitation “the data in the partial address space” on lines 2-3, however, there is insufficient antecedent basis for this limitation in the claim. Applicant may consider amending the claim to instead read “data in **a** partial address space”.

Appropriate correction is required.

REJECTIONS BASED ON PRIOR ART

Claim Rejections - 35 USC § 102

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. **Claims 1 and 10** are rejected under 35 U.S.C. 102(b) as being anticipated by Sukegawa (U.S. Patent 5,860,083).

17. **As per claim 1**, Sukegawa discloses a storage device comprising:

a first storage device which is a non-volatile storage device capable of inputting and outputting data with respect to a host, is provided with a first address space as seen from said host, and can be operated by a sector unit (col. 4, lines 6, 17-21, and 54-58; col. 10, lines 21-25; Fig. 1, element 2); *It should be noted that “hard disk drive (HDD) 2” is equivalent to a “first storage device”. It should also be noted that the HDD’s address space is equivalent to a “first address space”.*

Art Unit: 2185

a second storage device which is a non-volatile storage device capable of inputting and outputting data has a lower data error rate than said first storage device, can execute a high speed operation, and can be operated by a sector unit (col. 1, lines 53-55; col. 4, lines 5 and 17-21; col. 10, lines 21-25; Fig. 1, element 1); *It should be noted that the "flash EEPROM" within the "flash memory unit 1" is equivalent to a "second storage device". It should also be noted that because flash memory is less prone to mechanical failure than hard disk drives, it follows that flash memory has a "lower data error rate" due to mechanical failure than hard disk drives.*

and control means for making said second storage device execute an instruction when said host issues the instruction to an address in said first address space and in the case where the address is included in a previously defined partial address space in said first address space (col. 5, lines 54-67; Fig. 1, element 3; Fig. 3, elements S8 and S9). *It should be noted that the flash memory unit's permanent storage area 10A provides the data for the read command even though the host issued the read command to read data from an address in the HDD. It should also be noted that the HDD's address space that stores the "AP control information" is equivalent to a "partial address space". Lastly, it should be noted that "controller 3" is equivalent to the "control means".*

18. **As per claim 10**, Sukegawa discloses a storage device comprising:

a first storage device which is a non-volatile storage device capable of inputting and outputting data with respect to a host, is provided with a first address space as seen from said host, and can be operated by a sector unit (col. 4, lines 6, 17-21, and

Art Unit: 2185

54-58; col. 10, lines 21-25; Fig. 1, element 2); *See the citation note for the same limitation in claim 1 above.*

a second storage device which is a non-volatile storage device capable of inputting and outputting data has a lower data error rate than said first storage device, can execute a high speed operation, and can be operated by a sector unit (col. 1, lines 53-55; col. 4, lines 5 and 17-21; col. 10, lines 21-25; Fig. 1, element 1); *See the citation note for the same limitation in claim 1 above.*

and control means for extracting a partial data from data corresponding to said first address space and storing said extracted partial data in said second storage device (col. 5, lines 29-35; Fig. 1, element 3; Fig. 3, elements S4 and S5). *It should be noted that the "AP control information" is equivalent to "partial data". It should also be noted that "controller 3" is equivalent to the "control means".*

Claim Rejections - 35 USC § 103

19. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

20. **Claims 3-5, 8, 11, 12, 23, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Kon (U.S. Patent 6,249,838).**

Art Unit: 2185

21. **As per claim 3**, Sukegawa discloses all the limitations of the claim except wherein the data stored in said second storage device is data of file management information.

Kon discloses the data stored in said second storage device is data of file management information (col. 9, lines 4-10). *It should be noted that the "flash memory" is equivalent to a "second storage device" and a "FAT (file allocation table)" is equivalent to "file management information".*

Sukegawa and Kon are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kon's data storage unit with Sukegawa's flash memory unit and HDD. In such a combination the FAT is extracted from the HDD and stored in flash memory. The motivation for doing so would have been use information stored in the flash memory to recover or access information stored in the disk, even after a head crash or similar problem has destroyed an on-disk super-block, FAT or similar information (Kon, col. 5, lines 3-7).

22. **As per claim 4**, the combination of Sukegawa/Kon discloses said second storage device (Sukegawa, col. 4, line 5; Fig. 1, element 1), but does not expressly disclose a storage capacity of said second storage device is equal to or less than 128 M bytes. At the time of the invention it would have been an obvious design choice to one of ordinary skill in the art to have made Sukegawa/Kon's flash EEPROM with a storage capacity equal to or less than 128 M bytes because such a modification would have

Art Unit: 2185

involved a mere chance in the size of Sukegawa/Kon's flash EEPROM. A change in size is generally recognized as not being sufficient to patentably distinguish over the prior art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955).

23. **As per claim 5**, the combination of Sukegawa/Kon discloses wherein said first storage device and said second storage device are provided in one chassis having a slot (Kon, col. 9, lines 17-27; Fig. 6); *It should be noted that the "removable medium hard disk" is equivalent to a "chassis", a "removable media pack" is equivalent to a "first storage device", and a "flash memory" is equivalent to the "second storage device".*

and said first storage device can be detached through said slot (Kon, col. 9, lines 21-23; Fig. 6).

24. **As per claim 8**, the combination of Sukegawa/Kon discloses wherein an entire system is stored in said first storage device (Kon, col. 4, lines 19-22; Fig. 1, element 114), data in the partial address space is copied to the second storage device (Kon, col. 9, lines 4-10), and then, the data in said partial address space in the first storage device is deleted (Kon, col. 9, lines 9-10). *It should be noted that "normal memory 114" is equivalent to the "first storage device", the "flash memory" is equivalent to the "second storage device", and the "FAT" is equivalent to "data in the partial address space". It should also be noted that when the FAT is stored on the flash memory in "exclusive form" it means the FAT is no longer on the normal memory (i.e. the FAT has been deleted from the normal memory).*

25. **As per claim 11**, the combination of Sukegawa/Kon discloses wherein said extracted partial data is data of file management information (Kon, col. 9, lines 4-10). *It*

Art Unit: 2185

should be noted that the "FAT" is equivalent to both "extracted partial data" and "data of file management information".

26. **As per claim 12**, the combination of Sukegawa/Kon discloses wherein said extracted partial data is a code data for detecting and correcting an error (Kon, col. 9, lines 4-10). *It should be noted that "ECC (error correction code)" is equivalent to "code data for detecting and correcting an error".*

27. **As per claim 23**, Sukegawa discloses a storage system having a host and a storage device,

wherein said storage device comprises:

a first storage device which is a non-volatile storage device and can be operated by a sector unit (col. 4, line 6; col. 10, lines 21-25; Fig. 1, element 2); *See the citation note for the similar limitation in claim 1 above.*

said host comprises:

a ROM in which a processing program is stored (col. 4, lines 45-46; Fig. 1, element 28); *It should be noted that "BIOS" is equivalent to a "processing program".*

a CPU and a RAM for executing said processing program (col. 4, lines 39-42; Fig. 2, elements 22 and 23);

a controller which controls an input and output of data between said host and said storage device (col. 4, lines 17-21; Fig. 1, element 3);

and a non-volatile memory device which has a lower data error rate than said first storage device, can execute a high speed operation, and can be operated by a sector unit (col. 1, lines 53-55; col. 4, line 5; col. 10, lines 21-25; Fig. 1, element 1), and

Art Unit: 2185

in which data relating to an application program with respect to said first storage device is stored (col. 5, lines 29-35; Fig. 3, elements S4 and S5); *See the citation note for the similar limitation in claim 1 above.*

and said processing program stored in said ROM has a function to refer to said data relating to the application program stored in said non-volatile memory device (col. 7, lines 4-9).

Sukegawa does not expressly disclose a non-volatile memory device in which data relating to a file management with respect to said first storage device is stored;

and referring to said data relating to the file management stored in said non-volatile memory device at a time of accessing to said first storage device.

Kon discloses a non-volatile memory device in which data relating to a file management with respect to said first storage device is stored (col. 9, lines 4-13); *It should be noted that the "flash memory" is equivalent to a "non-volatile storage device" and a "disk" is equivalent to a "first storage device". It should also be noted that a disk's "FAT" is equivalent to "data relating to a file management with respect to said first storage device".*

and referring to said data relating to the file management stored in said non-volatile memory device at a time of accessing to said first storage device (col. 4, line 63 - col. 5, line 7).

Sukegawa and Kon are analogous art because they are from the same field of endeavor, that being data storage systems.

Art Unit: 2185

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kon's data storage unit with Sukegawa's flash memory unit and HDD. In such a combination the FAT is stored in flash memory and referred to when accessing the HDD. The motivation for doing so would have been use information stored in the flash memory to recover or access information stored in the disk, even after a head crash or similar problem has destroyed an on-disk super-block, FAT or similar information (Kon, col. 5, lines 3-7).

28. **As per claim 26**, the combination of Sukegawa/Kon discloses wherein an entire system is stored in said first storage device (Kon, col. 4, lines 19-22; Fig. 1, element 114), data in a partial address space is copied to the second storage device (Kon, col. 9, lines 4-10), and then, the data in said partial address space in the first storage device is deleted (Kon, col. 9, lines 9-10). *See the citation note for the similar limitation in claim 8 above.*

29. **Claims 9 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Toshiba, "What is NAND Flash Memory?" (hereinafter "Toshiba").

30. **As per claim 9**, Sukegawa discloses all the limitations of the claim except wherein said second sector unit is an integral multiple of 512 bytes.

Toshiba discloses a sector unit is an integral multiple of 512 bytes (pg. 2, "Page programming").

Sukegawa and Toshiba are analogous art because they are from the same field of endeavor, that being data storage systems.

Art Unit: 2185

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use Toshiba's NAND flash memory to constitute Sukegawa's flash memory unit. The motivation for doing so would have been to provide a flash memory with high performance, high speed programming and erasing, low cost, and easy memory expansion (Toshiba, pg. 2).

31. **As per claim 14**, the combination of Sukegawa/Toshiba discloses wherein said first storage device is a hard disk drive (HDD) (Sukegawa, col. 4, line 6; Fig. 1, element 2);

and said second storage device is a NAND flash memory or an AND flash memory (Sukegawa, col. 4, line 5; Fig. 1, element 1; Toshiba, pg. 2).

32. **Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Kon as applied to claim 3 above, and further in view of Toshiba.**

33. **As per claim 6**, the combination of Sukegawa/Kon discloses wherein said first storage device is a hard disk drive (HDD) (Sukegawa, col. 4, line 6; Fig. 1, element 2);

and said second storage device is a flash memory (Sukegawa, col. 4, line 5; Fig. 1, element 1).

The combination of Sukegawa/Kon does not expressly disclose said second storage device is a NAND flash memory or an AND flash memory.

Toshiba discloses NAND flash memory (pg. 2).

The combination of Sukegawa/Kon and Toshiba are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use Toshiba's NAND flash memory to constitute Sukegawa/Kon's flash memory unit. The motivation for doing so would have been to provide a flash memory with high performance, high speed programming and erasing, low cost, and easy memory expansion (Toshiba, pg. 2).

34. Claims 7 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Kon as applied to claims 3 and 23 above, and further in view of Ishida et al. (U.S. Patent Application Publication 2002/0019700) (hereinafter "Ishida").

35. **As per claim 7**, the combination of Sukegawa/Kon discloses all the limitations of the claim except wherein said storage device is used as a storage medium of a car navigation system.

Ishida discloses a car navigation system (paragraph 0040; Fig. 1).

The combination of Sukegawa/Kon and Ishida are analogous art because they are from the same field of endeavor, that being electronic devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use Sukegawa/Kon's flash memory unit and HDD as Ishida's information storage unit. The motivation for doing so would have been to quickly read out, from the permanent storage area used as cache memory area, an application program control information, thereby, the host system can quickly acquire the control information at the time of starting the application program. As a result, the application

Art Unit: 2185

program [of the car navigation system] can be quickly started (Sukegawa, col. 6, lines 8-13; Ishida, paragraph 0043).

36. **As per claim 25**, the combination of Sukegawa/Kon discloses all the limitations of the claim except wherein said system is a car navigation system.

Ishida discloses a car navigation system (paragraph 0040; Fig. 1).

The combination of Sukegawa/Kon and Ishida are analogous art because they are from the same field of endeavor, that being electronic devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Sukegawa/Kon's data storage system with Ishida's car navigation system. The motivation for doing so would have been to quickly read out, from the permanent storage area used as cache memory area, an application program control information, thereby, the host system can quickly acquire the control information at the time of starting the application program. As a result, the application program [of the car navigation system] can be quickly started (Sukegawa, col. 6, lines 8-13; Ishida, paragraph 0043).

37. **Claims 15 and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Coulson (U.S. Patent 6,785,767).

38. **As per claim 15**, Sukegawa discloses a storage system having a host and a storage device,

wherein said host comprises:

a CPU and a RAM for executing a processing program (col. 4, lines 39-42; Fig. 2, elements 22 and 23); *It should be noted that the both the OS and AP are equivalent to "processing programs".*

and a controller which controls an input and output of data between said host and said storage device (col. 4, lines 17-21; Fig. 1, element 3);

said storage device comprises:

a first storage device which is a non-volatile storage device and can be operated by a sector unit (col. 4, line 6; col. 10, lines 21-25; Fig. 1, element 2); *See the citation note for the similar limitation in claim 1 above.*

a second storage device which is a non-volatile storage device, has a lower data error rate than said first storage device, can execute a high speed operation, and can be operated by a sector unit (col. 1, lines 53-55; col. 4, line 5; col. 10, lines 21-25; Fig. 1, element 1); *See the citation note for the similar limitation in claim 1 above.*

and a drive setting terminal by which said host discriminates said first storage device and said second storage device (col. 4, lines 54-58; Fig. 1, element 3).

Sukegawa does not expressly disclose said processing program has a function to allocate a partial address space included in address spaces of said storage device to which continuous addresses are allocated, to said second storage device, and to allocate the other address spaces to said first storage device.

Coulson discloses allocating a partial address space included in address spaces of said storage device (col. 3, lines 58-50; Fig. 2, element 201), to which continuous addresses are allocated to said second storage device (col. 4, lines 2-3; Fig. 2, element

Art Unit: 2185

211), and allocating the other address spaces to said first storage device (col. 4, lines 4-53; Fig. 2, element 221). *It should be noted that "address space 201" is equivalent to a "partial address space", the "hybrid mass storage device" is equivalent to a "storage device", "array address 211" are equivalent to "continuous addresses", "non-volatile storage array 135" is equivalent to a "second storage device", "disk addresses 221" are equivalent to "other address spaces", and "hard disk storage medium 133" is equivalent to a "first storage device".*

Sukegawa and Coulson are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to apply Coulson's address space partitioning to Sukegawa's flash memory and HDD. The motivation for doing so would have been to advantageously use the benefits of the faster storage medium by assigning the lower part of the hybrid storage device address range to the faster storage medium, thus causing the hot data to be stored on the faster storage medium (Coulson, col. 2, lines 61-65).

39. **As per claim 22**, the combination of Sukegawa/Coulson discloses wherein said second sector unit is an integral multiple of 512 bytes (Coulson, col. 3, line 67 – col. 4, line 3).

40. **Claims 17, 18, and 21** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Coulson as applied to claim 15 above, and further in view of Kon.

Art Unit: 2185

41. **As per claim 17**, the combination of Sukegawa/Coulson discloses all the limitations of the claim except wherein a storage capacity of said second storage device is equal to or less than 128 M bytes, and data of file management information is stored in said second storage device.

Kon discloses data of file management information is stored in said second storage device (col. 9, lines 4-10). *See the citation note for the similar limitation in claim 3 above.*

The combination of Sukegawa/Coulson and Kon are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Kon's data storage unit with Sukegawa/Coulson's flash memory unit and HDD. In such a combination the FAT is extracted from the HDD and stored in flash memory. The motivation for doing so would have been use information stored in the flash memory to recover or access information stored in the disk, even after a head crash or similar problem has destroyed an on-disk super-block, FAT or similar information (Kon, col. 5, lines 3-7).

The combination of Sukegawa/Coulson/Kon discloses said second storage device (Sukegawa, col. 4, line 5; Fig. 1, element 1), but does not expressly disclose a storage capacity of said second storage device is equal to or less than 128 M bytes. At the time of the invention it would have been an obvious design choice to one of ordinary skill in the art to have made Sukegawa/Coulson/Kon's flash EEPROM with a storage capacity equal to or less than 128 M bytes because such a modification would have

Art Unit: 2185

involved a mere chance in the size of Sukegawa//Coulson/Kon's flash EEPROM. A change in size is generally recognized as not being sufficient to patentably distinguish over the prior art. *In re Rose*, 220 F.2d 459, 105 USPQ 237 (CCPA 1955).

42. **As per claim 18**, the combination of Sukegawa//Coulson/Kon discloses wherein said first storage device and said second storage device are provided in one chassis having a slot (Kon, col. 9, lines 17-27; Fig. 6); *See the citation note for the similar limitation in claim 5 above.*

and said first storage device can be detached through said slot (Kon, col. 9, lines 21-23; Fig. 6).

43. **As per claim 21**, the combination of Sukegawa/Coulson/Kon discloses wherein an entire system is stored in said first storage device (Kon, col. 4, lines 19-22; Fig. 1, element 114), data in the partial address space is copied to the second storage device (Kon, col. 9, lines 4-10), and then, the data in said partial address space in the first storage device is deleted (Kon, col. 9, lines 9-10). *See the citation note for the similar limitation in claim 8 above.*

44. **Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Coulson as applied to claim 15 above, further in view of Kon as applied to claim 17 above, and even further in view of Toshiba.**

45. **As per claim 19**, the combination of Sukegawa/Coulson/Kon discloses wherein said first storage device is a hard disk drive (HDD) (Sukegawa, col. 4, line 6; Fig. 1, element 2);

and said second storage device is a flash memory (Sukegawa, col. 4, line 5; Fig. 1, element 1).

The combination of Sukegawa/Coulson/Kon does not expressly disclose said second storage device is a NAND flash memory or an AND flash memory.

Toshiba discloses NAND flash memory (pg. 2).

The combination of Sukegawa/Coulson/Kon and Toshiba are analogous art because they are from the same field of endeavor, that being data storage systems.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to use Toshiba's NAND flash memory to constitute Sukegawa/Coulson/Kon's flash memory unit. The motivation for doing so would have been to provide a flash memory with high performance, high speed programming and erasing, low cost, and easy memory expansion (Toshiba, pg. 2).

46. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sukegawa in view of Coulson as applied to claim 15 above, further in view of Kon as applied to claim 17 above, and even further in view of Ishida.

47. **As per claim 20**, the combination of Sukegawa/Coulson/Kon discloses all the limitations of the claim except wherein said system is a car navigation system.

Ishida discloses a car navigation system (paragraph 0040; Fig. 1).

The combination of Sukegawa/Coulson/Kon and Ishida are analogous art because they are from the same field of endeavor, that being electronic devices.

At the time of the invention it would have been obvious to a person of ordinary skill in the art to combine Sukegawa/Coulson/Kon's data storage system with Ishida's

Art Unit: 2185

car navigation system. The motivation for doing so would have been to quickly read out, from the permanent storage area used as cache memory area, an application program control information, thereby, the host system can quickly acquire the control information at the time of starting the application program. As a result, the application program [of the car navigation system] can be quickly started (Sukegawa, col. 6, lines 8-13; Ishida, paragraph 0043).

Conclusion

STATUS OF CLAIMS IN THE APPLICATION

The following is a summary of the treatment and status of all claims in the application as recommended by MPEP 707.70(i):

CLAIMS REJECTED IN THE APPLICATION

Per the instant office action, **claims 1, 3-12, 14, 15, 17-23, 25, and 26** have received a first action on the merits and are subject of a non-final action.

RELEVANT ART CITED BY THE EXAMINER

The following prior art made of record and not relied upon is cited to establish the level of skill in Applicant's art and those arts considered reasonably pertinent to Applicant's disclosure. See MPEP 707.05(e).

U.S. Patent 7,017,037 (Fortin et al.) discloses a method and apparatus to decrease the boot time and the hibernate awaken time of a computer system is presented. Static and dynamic configuration data is stored in flash memory.

U.S. Patent 7,127,549 (Sinclair) discloses a disk device is combined with a non-volatile memory device to provide much shorter write access time and much higher data write speed than can be achieved with a disk device alone.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arpan P. Savla whose telephone number is (571) 272-1077. The examiner can normally be reached on M-F 8:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sanjiv Shah can be reached on (571) 272-4098. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Arpan P. Savla/
Examiner, Art Unit 2185
September 30, 2010